# A COMPARATIVE STUDY OF EPIDEMIOLOGY, CLINICAL PRESENTATION AND SEROLOGY OF SYPHILIS IN HIV AND NON - HIV PATIENTS

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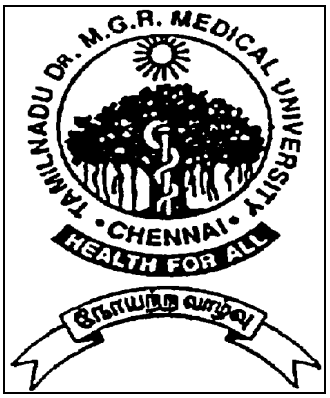


**THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY**
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# CERTIFICATE

Certified that this dissertation entitled **"A COMPARATIVE STUDY OF EPIDEMIOLOGY, CLINICAL PRESENTATION AND SEROLOGY OF SYPHILIS IN HIV AND NON - HIV PATIENTS"** is a bonafide work done by **Dr.R.KARTHIKEYAN,** Post Graduate Student of Department of Dermatology and Leprosy and Institute of STD, Madras Medical College, Chennai - 600 003, during the academic year 2003 - 2006. This work has not previously formed the basis for the award of any degree or diploma.

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# CONTENTS

# INTRODUCTION

There is strong epidemiological association between HIV infection and syphilis. Both disease are predominantly sexually transmitted and syphilis patients are at increased risk for HIV infection.

In HIV infected persons, it has been reported that syphilis shows atypical clinical and serological courses, unreliable response to therapy and premature development of neurosyphilis.

Its is well documented that prevalence of STD favours transmission of HIV in the community and control of STD has brought down the transmission of HIV to 42% according to Mwanza study[1].

This study is designed to compare the epidemiological, clinical presentation, serological variation of syphilis and other associated STDs in presence of HIV infection and in HIV negative patients in our setting.

# REVIEW OF LITERATURE

## Definition[2]

Syphilis was defined by stokes, as an infectious disease, due to Treponema Pallidum of great chronicity, systemic from the outset, capable of involving practically every structure of the body in its course, distinguished by florid manifestations on the one hand and years of completely asymptomatic latency on the other, able to simulate many disease in the field of medicine and surgery, transmissible to off - spring in man, transmissible to certain laboratory animals and treatable to the point of presumptive cure.

## History of Syphilis[3]

There are two theories regarding the origin of syphilis. One the Unitarian theory, according to which the disease originated in the tropics as a primitive treponemal disease and later spread to more temperate climates affecting more advanced communities where transmission by sexual contact became the usual mode of spread of disease.

The other theory is columbian theory, according to which the disease was brought to Europe with the return of columbus in 1493 after his discovery of America from Europe the disease spread to India and far East through portuguese sailors.

The disease acquired its name from a poem "Syphilis Sive Morbus Gallicus' written in 1530 by an Italian Pathologists Giralamo Fracostaro about an infected mythical shepherd named syphlicus afflicted with the french disease as punishment for cursing the gods.

In 18th century (1728 - 1793) John Hunter of London believed that syphilis and Gonorrhoea are different manifestations of same infection. To test the validity of this theory he obtained pus from patient with gonorrhoea and inoculated himself. It was most unfortunate that the inoculam was contaminated with the causative organism of syphilis as well, and both syphilis and gonorrhoea developed in typical fashion.

The view that syphilis and gonorrhoea were different diseases was firmly established by Ricord in 1838. Fritz Schaudiam and Erich Hoftmann in 1905 discovered the spirochete organism in serum from a lesion of secondary syphilis. They reported that syphilis was caused by a spirochete which they named "Spirochaeta Pallida". this work was quickly confirmed when Karl Landsteiner introduced the dark field method for the detection of the organism in 1906. In 1906 wasserman of Berlin described complement fixation test for syphilis.

In 1943, penicillin which was discovered by Sri Alexander Fleming and developed by Florey in oxford, was successfully used by Mahoney and his colleagues to treat syphilis. In 1946, Harris et al., described the VDRL slide flocculation test.

**Epidemiology**

Syphilis being on ulcerative disease, occurs all over the world without any restriction to any social class. Every case of infectious syphilis should be considered as a potential source of infection. It is a major cause of Genitourinary disease and an important risk factor in the transmission of HIV Infection. In developed countries the prevalence of syphilis has fallen steeply due to improved access to health care and effective treatment. But in developing countries like India, it still remains a public health problem.

The factors that operate and interact in acquisition and spread of the disease are complex in nature. Sexual promiscuity and prostitution are the twin menaces around which revolve other factors. The population explosion, migration of people from rural to urban areas, disproportionate male to female ratio in urban and pilgrim centres, the mushrooming growth of slums in the cities and towns leading to overcrowding with lower socioeconomic status, decline in moral values, ignorance and lack of sexual education all account for the spread of the disease. The social stigma attached to a sexually transmitted diseases leads to its concealment and aids its spread. The cinema, magazines, wall posters, exhibits, advertisements etc also encourage promiscuity[4]. Association between high risk behaviour pattern and syphilis well documented. Extramarital sexual activity, disharmony with spouse, premarital sex, multiple sex partners, non usage of condoms, visiting commercial sex workers are important risk factors.

In India, prostitution is still an important cause for the spread of STDs. Economic factors play a considerable role in prostitution particularly among the underprivileged. Syphilis was the commonest STD affecting 30% of 200 prostitutes attending a clinic for various ailments[5].

A country's socio - economic structure and its functioning determines the prevalence of syphilis in a community. In India as well as in other developing countries, poor reporting systems make it difficult to obtain the exact incidence and prevalence of syphilis. The reported incidence of early syphilis among STD patients in India declined from 61.2% in 1954 to 9.1% in 1994. Syphilis is the commonest STD in India and accounted for 10.4% to 36.1%[6]. As per serological surveys its prevalence ranges from 2.66 to 26.6%[7] syphilis is more common in males than in females and more common in 20 - 40 years, sexually active age group. It has been observed that majority of males continue to be sexually active even after acquiring the

infection. Alcohol and drug abuse are additional risk factors.

**Microbiology**[8,9]

Treponema Pallidum is a thin, delicate spirochete with tapering ends, about 8 - 16 µm long and 0.1 - 0.2 µm wide. It has about 6 - 20 regular spirals, sharp and angular at regular interval of about 1 µm. It is actively motile exhibiting rotation around long axis, backward and forward movement, the whole body is flexible. Other movements are buckling, undulating, coil compression and expansion, angulation and looping. The organism divide by binary fission.

**Electron Microscope**[8]

The cytoplasm surrounded by trilaminar cytoplasmic mambrane, enclosed by a cell wall containing peptidoglycan which gives cell rigidity and shape. External to this is lipid rich outer membrane layer, through which only a few antigenic proteins protrude (TROMP) from each end of cell. There is 3 - 4 endoflagella wind around axis of cell but do not protrude outside, remain with in outer membrane layer. The highly immunogenic portions of organism are lipoprotein anchored predominantly to periplasmic leaflet of cytoplasm membrane.

**Cultivation**

Pathogenic T.P. do not grow in artificial media. Virulent T.P. strains are maintained for decade by serial testicular passage in rabbits (Nichol Strain). This is used for diagnostic and research purpose. The isolate of non - pathogenic T.P (Reiter Strain) is used as Antigen in group specific treponemal test for diagnosis of syphilis. The reiter strain grow well on thioglycollate medium containing serum.

**Resistance**

Treponema pallidum is very delicate, inactivated by drying or at the temperature of 41 - 42ºC in one hour which is the basis for fever therapy. It is killed in 1 - 3 days at 0 - 4ºC. Inactivated by contact with $O_2$, distilled water, soap, arsencial, mercurial, bismuch and common antiseptic agents.

**Pathogenesis**[10]

The complex host - microbe interactions that characterise the varied clinical course of syphilis are poorly understood. Treponema Pallidum penetrate through small breaks in skin or mucosa. The generation time of T.Pallidum during early active stage is 30 - 33 hrs. The concentration of Treponemes generally reaches at least $10^7$/g of tissue before the appearance of a clinical lesion. The median incubation period in human is 21 days suggests an average inoculam of 500 - 1000 infections organisms. The infectious dose for 50% of individuals to develop the disease is 57 organisms. After penetration, the organism slowly multiplies at the site of inoculation and forms a primary chancre. Both CMI and humoral antibody response occurs against T.Pallidum. CMI causes tissue damage mainly by recruitment of lymphocytes (CD8 + CD4 + cells), Plasma cells and macrophages resulting in capillary endothelial proliferation and subsequently endarteritis obliterans resulting in primary chancre. Due to TH1 - type cytokine profile, macrophages are activated leading to phagocytosis and ultimately destruction of treponemes, resulting in spontaneous resolution of chancre. But due to partially exposed immunogenic surface proteins, (TROMP)[11] treponemes persists resulting in partial immunity and dissemination of infection, through blood and lymphatics long before the

appearance of primary lesions. Humoral responses lead to development of cross reacting non - specific (non - treponemal) antibodies.

**Clinical Classification of Syphilis**

**Early Syphilis**

Primary

Secondary

Early Latent

**Primary Syphilis**[2,9]

After an incubation period of 9 - 90 days (mean 21 days), Infection starts as a macule, becoming papule subsequently ulcerates to form a chancre. In men common sites are coronal sulcus, glans, shaft of penis, prepuce, frenulum, urinary meatus. In women vulva, vagina, cervix[12] are the common sites. The physical characteristics of primary chancre are.

Single, Indurated, painless ulcer with sharply defined border. Exudate is serous. Base tends to be clean with a faint greyish pellicle. A painless non - inflammatory, discrete enlargement of the adjacent lymph nodes usually bilateral develops after the appearance of the lesion. Two third of cases on healing leaves thin atrophic invisible scar. Extra genital chance occurs on Anorectal, oral cavity, breast, hands, fingers, nails etc.

Condom chancre - chancre occuring at hilt of shaft of penis.

Chancre redux - recurrence of primary sore at site of original lesion[13]

Pseudo chancre redux - Gumma occuring at site of primary sore

Follman's balanitis - Inflammatory reaction of glans in primary syphilis.

Syphilis d'emblee[14] - Syphilis without chancre due to direct inoculation as a result of blood transfusion.

The primary lesions will heal within three to ten weeks and may go unnoticed by the patient.

**Secondary Syphilis[2,9,15]**

The lesions of secondary syphilis usually occurs 4 - 8 weeks after the appearance of primary chancre. In about one third of cases, primary lesions is still present. The lesions are generalised and can involve any organ. Although skin rash and lymphadenopathy are the most common manifestation more than 60% doesn't recall any type of lesions[16].

The rash may be macular, papular, maculopapular, papulosquamous, psoriasiform, annular, pustular, nodular, lichenoid or follicular[17]. Vesiculobullous lesions do not occur in adults. Rash in Generalised, non itchy, bilateral and symmetrical involving Trunk, extremities, palms and soles. Face is usually spared. Papules along hairline on forehead arranged in a crown like pattern called corona veneri. Follicular type associated with pruritus and can go for neurosyphilis. Corymbose syphilid characterised by central plaque surrounded by smaller satellite papules. Buschke ollendorf sign - deep dermal tenderness elicited by applying pressure

with blunt side of pin over a papule. In warm and moist areas of body like Genitals, perineum, perianal, under breast, axilla, groin, the lesions may proliferate to form broad based flat topped papules.

Mucous lesions in the form of serpigneous ulcers called as snail track ulcers, erosions, split papules affecting oral and genital mucosa.

Motheaten alopecia beginning in the occipital hair is characteristic. Loss of eyelashes and lateral 1/3 of eyebrow may occur.

Lymphadenopathy involving two or more groups are discrete, rubbery, painless and non tender. The occipital, axillary, inguinal, epitrochlear group of lymph nodes are most commonly involved.

Systemic manifestations include fever, malaise, mild hepatitis with elevated liver enzymes, icterus, uveitis, arthritis, parotids, pulmonary changes, periostitis, glomerulo nephritis, myocarditis, neurological involvement can occur but mostly are asymptomatic. Untreated secondary syphilitic rash can last several weeks. Relapse can occur in 25% cases. The severity of relapse is less severe than initial episode.

**LATENT SYPHILIS**

Latent syphilis defined as reactive serology along with positive specific trepenemal Antigen tests in the absence as well as adequate treatment. 2 year period (WHO), 1 year period (CDC) guidelines considered demarcation between early and late latent syphilis. This is important, as patients in early latent stage may have relapse of secondary syphilis and is

considered infectious.

**LATE SYPHILIS**

Classified as

1. Late latent
2. Late Benign
3. Tertiary syphilis
   - CVS
   - Neurosyphilis

**Late Benign Syphilis[10]**

Manifests commonly as Gumma. The lesions are due to cellular hypersensitivity to few treponemes. Histologically show a granulomatous inflammation with central area of necrosis. The most commonly involved sites include skin and skeletal system, mouth, upper respiratory tract, larynx, liver, stomach. However any organ can be affected.

Skin lesions may be solitary or multiple, painless and indurated nodular, papulosquamous and ulcerative lesions which are destructive, chronic tend to heal centrally and extend peripherally. Skeletal Gumma most frequently involves long bones of legs, but any bone can be affected. In late benign syphilis, serological tests are almost reactive and usually at high titre.

**TERITARY SYPHILIS**

**NEURO SYPHILIS**[10]

After acquiring the infection, spirochetes frequently invade the meninges early in infection within 3 - 18 months of infection, eventhough neurosyphilis considered as a late manifestation.

CNS involvement classified by Merrit et al.,[18] as

1. **Asymptomatic Neuro Syphilis :** Characterised by CSF abnormalities (ie) positive CSF VDRL, increased cell count, occasionally increased protein without symptoms or signs of neurological involvement.

2. **Meningeal Syphilis :** Onset usually less than 1 year after acquiring infection involve either brain or spinal cord and presents with headache, nausea, vomiting, neck stiffness, cranial nerve involvement, seizures and changes in mental status. Those presenting with uveitis or iritis frequently have meningeal syphilis.

3. **Meningovascular syphilis :** Occurs 5 to 10 years after infection. The disease reflects diffuse inflammation of pia and arachnoid together with evidence of focal or widespread arterial involvement. Common presentation is stroke syndrome involving middle cerebral artery often manifesting as subacute encephalitic syndrome.

4. **Parenchymatous syphilis**

**a. General paresis of insanc**

Occuring 15 - 20 years after infection. The disease reflect widespread late

parenchymal damage; including abnormalities of personality, affect, hyperactive reflexes, AR pupil, Altered sensorium, decrease in recent memory and speech.

**b. Tabes dorsalis**

The disease due to demyelination of posterior column, dorsal root, dorsal root ganglia. Usually occuring 25 - 30 years after infection. Symptoms include ataxic wide based gait, paresthesia, bladder disturbances, impotence, areflexia and loss of position, deep pain and temperature sensation. Charcot Joint (Trophic Joint degeneration), perforating ulceration of feet and a small irregular Argyll robertson pupil react to accommodation and not to light.

Other findings include syphilitic optic atrophy, spinal cord involvement and nerve deafness.

**Cardiovascular Syphilis[19]**

Infection usually occurs after 10 - 40 years. Starts as an arteritis in the supra cardiac portion of aorta and progresses as follows :

- Narrowing of coronary ostia with decreased coronary circulation, Angina and MI.
- Scarring of Aortic valves producing Aortic regurgitation and eventually congestive cardiac failure.
- Due to median necrosis of aorta with saccular Aneurysm formation and associate pressure symptoms of dysphagia, hoarseness, brassy cough, back pain and rupture of aneurysms.

Aortic insufficiency with no other valvular lesions in a person of middle age with a reactive serologic test should be considered cardiovascular syphilis until proven otherwise.

**Lab Diagnosis of Syphilis[20]**

Lab diagnosis for syphilis have been divided into 4 catogaries.

1. Direct microscopic identification of organism from lesions of primary and secondary syphilis by :

    i. Dark field examination

    ii. Direct fluorescent Antibody test.

2. Serological tests to detect IgG Antibodies.

    a. Non treponemal test

    These are useful for screening purposes, however they can be confirmatory when titres are high.

**VDRL (Venereal Disease Research Laboratory)**

It is a slide flocculation test. This test having a standardised antigen comprising of lecithin, cholesterol, purified cardiolipin to detect antigen against cardiolipin. As antigen used is present in all mammalian tissue, the damage to host tissue of infection, immunization, pregnancy, age related changes of autoimmune disease can result in False positive VDRL test[21]. This reactivity will be usually in low dilution < 1:8. Biological false positive can be acute < 6

months, chronic > 6 months. HIV is an important cause of biological false positive[22]. Prozone phenomenon is an immunological event seen with VDRL. In this due to Antibody excess (Blocking Ab) false negative test result will occur[23]. This is more common in patients with secondary syphilis and HIV infection. VDRL titre in primary syphilis will be ≤ 1:8 upto 1:16 secondary syphilis ≥1:32, latent and tertiary stage titre will be low.

**CSF Examination[24]**

CSF is a sensitive indicator of presence of active neurosyphilitic infection. The CSF abnormalities are :

Cell Count : More than 5 lymphocyte is abnormal

Total Protein : More than 40 mgs% usually abnormal

CSF VDRL : A reactive spinal VDRL is always a indication of CNS syphilis, but not necessarily of its activity. False positive reactions in spinal fluid are rare.

Increase in gammaglobulin (IgG); usually with oligoclonal banding.

The Glucose count is usually normal. In general, the cell count may be expected to return first to normal followed by protein and finally the serological test.

**ii. Specific Tests**

1. Treponema pallidum immobilization test (TPI)

2. Treponema palldium hemagglutination assay (TPHA)

3. Fluorescent Treponemal antibody absorption test (FTA-Abs)

4. Micro hemagglutination assay for T.pallidum (MHA-Tp)

5. Teponema palldium particle agglutrination test (TPPA)

6. ELISA.

7. Western blot

3. Direct Ag detection test - polymerase chain reaction (PCR)

4. Detection of T.Pallidium IgM Antibody

5. Tissue section

- Fontana
- Levaditi

All HIV positive patients with late latent syphilis or latent syphils of unknown duration should undergo CSF examination.

**Treatment**[25]

Goals of therapy are to prevent transmission and avoid late complications for Early infectious syphilis, both the patient and partner to be treated with single dose Inj. Benzathine Pencillin. 24 lakhs units IM (Or) Inj. Procaine Pencillin 12 lakh IM daily x 10 days. For late latent, gummatous and cardiovascular syphilis. Inj. Benzathine Pencillin 24 lakh units IM weekly x 3 weeks.

(or)

Inj. Procaine Pencillin 12 lakhs units im daily x 21 day.

In patient allergic to pen. G. alternate therapies are :

C. Tetracycline 500 mg Q1D

C. Doxy 100 mg Ibd

T.Erythromycin 500 mg Q1D

T.Azthiromycin 500 mg 1OD

For Neurosyphilis / ocular Syphilis

x 14 days for early syphilis and 28 days for late syphilis

Inj. Procaine Pen. G. 1.2 - 2.4 mega units + probenacid 500 mg Q1D daily for 10 - 14 days. Treatment for neurosyphilis in patients sensitive to pencillin G is to desensitize and give penicillin.

**Treatment in HIV (+) Patients[26]**

According to WHO guidelines, treatment is same as that of HIV negative individuals, but more frequent serological and clinical follow up to be done at 3, 6, 9, 12 & 24 months post treatment.

# AIDS

## INTRODUCTION[27]

Acquired immunodeficiency syndrome (called slim disease) is a fatal illness caused by a retrovirus known as HIV which breaks down the body immue system, leaving the victim vulnerable to a host of life threatening opportunistic infection, neurological disorder, and unusual malignancies. HIV once infected will be infected for life. The term AIDs refers onlyto the last stage of HIV infection. AIDs can be called modern pandemic affecting both the developed and developing countries.

## HISTORY[28,29]

* AIDs was first identified from New York and Los Angeles in 1981 from patients suffering from Kaposi Sarcoma and Penumocystis carini pneumonia in young homosexuals.

* In 1983, Luc Montagnier and colleagues, from paris isolated a retrovirus from patient with persistent generalised lymphadenopathy and called as lymphadenopathy associated virus.

* In 1984, Robert Gallo, USA isolated the virus from AIDs patients and called it as HTLV 3.

* In 1985, ELISA was introduced for detection of HIV antibodies.

* In 1986 - First case was identified in India, Chennai.

* In 1987 - Zidovudine was introduced.

* In 1991 - HIV 2 was identified in India, Bombay.

**EPIDEMIOLOGY**[30]

HIV / AIDs is a global pandemic, with cases reported from virtually every country. The global estimate of cases in 2003 among adult is 37 million, 2/3 of them in subsaharan Africa. In addition 2.5 million cases of children are living with HIV / AIDs. In 2003 alone, 5 million new cases of infection worldwide and 3 million deaths from AIDs has been reported. It is estimated that every 12 seconds a young person somewhere in the world acquire HIV infection, and 14,000 new HIV infections occur each day.

**INDIA**

India is now considered the country with the largest number of HIV infected persons in the world, 5.1 million in 2004. The epidemic is spreading primarily through heterosexual relations. The most rapid and well documented spread of HIV has occurred in Mumbai and Tamil Nadu. In Mumbai, according to some studies, HIV prevalence has reached the level of 50% in sex workers, 36% in STD patients and 2.5% in women attending antenatal clinic. Intravenous drug abuse is a problem in Manipur, where 55% of drug users are HIV infected and 1% of women attending antenatal clinics are infected with HIV. HIV is rapidly spreading to rural areas through migrant workers and truck drivers. Surveys show that 5 - 10% of some truck drivers in the country are infected with HIV. As estimated 1 - 2 million cases of tuberculosis occur in India every year. In Mumbai 10% of the patients presenting with TB are HIV positive. In Tamilnadu, almost half a million people are infected with HIV and the infection rate is three times higher in villages than in the cities. In India HIV epidemic is shifting from high risk population to general population.

## WHO CLINICAL CASE DEFINITION FOR AIDS[31]

AIDs in an adult is defined by the existence of atleast 2 of the major signs associated with atleast one minor sign, in the absence of known causes of immunosuppression such as cancer or severe malnutrition or other recognized etiologies.

### Major Signs

* Weight loss >10% of body weight
* Chronic diarrhoea > 1 month
* Prolonged fever >1 month (intermittent / constant)

### Minor signs

* Persistent cough > 1 month
* Generalizied pruritis dermatitis
* Recurrent herpes zoster
* Oropharyngeal candidiasis
* Chronic progressive and disseminated Herpes simplex Infection
* Generalised lymphadenopathy

The presence of generalised Kaposi's Sarcoma or cryptococcal meningitis is sufficient by itself for the diagnosis of AIDs.

## WHO STAGING SYSTEM FOR HIV INFECTION[32]

Clinical State I

* Asymptomatic
* Persistent generalized lymphadenopathy
* Performance scale 1 : asymptomatic, normal activity

Clinical Stage 2

* Weight loss <10% body weight
* Minor mucocutaneous manifestation (seborrheic dermatitis prurigo, fungal nail infections).
* Herpes zoster within last 5 years.
* Recurrent upper respiratory infection (bacterial sinusitis)
* Performance scale 2 : symptomatic, normal activity.

**Clinical Stage 3**

* Weight loss > 10% body weight
* Unexplained chronic diorrhoea > 1 month
* Unexplained prolonged fever (intermittent or constant > 1 month)
* Oral candidiasis (thrush)

* Oral hairy leucoplakia

* Pulmonary tuberculosis within the last year

* Severe bacterial Infection (Penumonia, Pyomyositis)

* Performance scale 3 : bed ridden <50% of the day during last month.

**Clinical Stage 4**

* HIV wasting syndrome (weight loss >10% plus either unexplained chronic diarrhoea > 1 month or chronic weakness and unexplained prolonged fever > 1 month).

* Pneumocystis carinii penumonia.

* Toxoplasmosis of the brain

* Cryptosporidiosis with diarrhoea > 1 month

* Cryptococcosis extrapulmonary

* Cytomegalovirus of an organ other than liver, spleen or lymph nodes.

* Herpes simplex virus infection, mucocutaneous >1 month or visceral.

* Progressive multifocal leucoencephalopathy (PML)

* Any disseminated endemic mycosis (i.e.) histoplasmosis, coccidioidomycosis.

* Candidiasis of oesophagus, trachea, bronchi or lungs.

* Atypical mycobacteria, disseminated.

* Non typhoid salmonella septicemia.

* Extra pulmonary tuberculosis

* Lymphoma

* Kaposi sarcoma

* HIV encephalopathy

* Performance scale 4 : bed ridden >50% of the day during the last month.

**LAB DIAGNOSIS OF HIV INFECTION** - Immunological Test[32]

Specific Tests[28].

* Haemoglobin - progressive reduction over time 10-20% of asymptomatic HIV + people are anaemic Vs 70% of AIDs patients.

* Leucocyte count - progressive reduction over time. Leucopenia in 10% of asymptomatic to 65% of AIDs patient.

* Platelet count - reduced in approximately 10% of asymptomatic and in upto 45% of AIDs patient.

* Neutrophil count - reduced in 20 - 50% of AIDS patient.

* Lymphocyte count - reduced in 70% of AIDs patients with opportunistic

infections.

* CD4 count - progressive reduction over time.

* CD8 + lymphocyte - initially increases, falls later

* CD4 / CD8 Ratio - progressive reduction over time

* LFT - abnormal in 90% but usually mildly, often less than or equal to 2 times the upper limits of normal.

* Serum globulins - Hypergammaglobulinemia (polyclonal).

* HB surface antigen - present in approximately 10% of patients.

* Treponemal antibody test - positive in upto 45% of HIV infected homosexual men.

**Specific Tests for HIV**

These include demonstration of HIV, its antigens, or other components and antibodies (or) virus isolation.

* Antigen detection
    - P24 Ag assay
    - P24 Ag capture assay (ELISA)
* Virus isolation

* PCR - specific test for diagnosis in all stages of HIV infection

* Antibody detection

This is the commonly used test for diagnosis of HIV infection. As antibodies are not produced during seroconversion, these tests are not useful in the window period.

- ELISA - Screening test

- Western Blot - Confirmatory test

* Other fluid tests

- Oral (salivary) HIV Ab EIA (orasure)

- Urine Ab EIA (Calypte HIV - 1 Urine EIA)

**Treatment Modalities Available for HIV / AIDs Objectives of the therapy**[33]

- Prolonging life and improving quality of life

- Reduction of viral repliation as much as possible for as long as possible to half disease progression and to prevent opportunistic infections and malignancies and

- To achieve reduction in HIV transmission.

**ANTI RETROVIRAL DRUGS**

i. Nucleoside Reverse Transcriptase Inhibitors

ii. Non nucleoside reverse transcriptase inhibitors

iii. Protease inhibitors

iv. Fusion Inhibitor

No mono - therapy or dual therapy (Except in PPTCT and PEP). Use three or more drugs and always watch for resistance to drugs.

# SYPHILIS AND HIV

Both STD and HIV predominently have the same route of transmission (i.e) the sexual route[34].

* Risk behaviour in individuals predisposed to STD and HIV just the same.

* Presence of other STIs make it easier for HIV to be transmitted from one partner to others.

* Infection with HIV affects other STIs by making them more resistant to treatment.

* Genital ulcers having 5 - 10 fold increase in risk of transmission of HIV.

Coinfection with syphilis, is strikingly common in HIV infected persons. Some studies report syphilis seroprevalence >30% in HIV positive patients[35,36]. Syphilitic genital ulcers are cofactors for bidirectional transmission of HIV. Virulent Treponema pallidum and its abundant membrane lipoproteins induce HIV - 1 gene expression and production in chronically infected macrophages leading to the progression of HIV infection. HIV infection reduces the immunologic responses to Treponemal infection, both cell mediated and Humoral immunity, which impairs the host defence against syphilis and facilitate its progression. Transient immunosuppresion during early stages of syphilis has a similar effect on host defences against HIV, leading to a synergistic immunosuppressive state, which could allow either agent to penetrate earlier into central nervous system.

In the presence of HIV infection, the clinical and serological natural history of syphilis may be altered, response to treatment may be less than expected and an increase in the incidence of neurosyphilis has been noted.

Coexistent HIV infection modifies syphilitic genital ulcer manifestations, like multiple primary chancre, extra genital chancre more frequently[37]. Secondary syphilis with concurrent primary chancre is more common in HIV infected persons, persistant chancres, rapid progression from primary to secondary syphilis, with florid signs and symptoms, including syphilis maligna characterised by noduloulcerative skin lesions, necrotising vasculitis, systemic symptoms, high VDRL titre have been recorded[38]. High persistent non treponemal titres as well as delayed serological responses to infection with Treponema pallidum, delayed regression to normal non - reactive levels after apparently adequate treatment and an unusually high incidence of biological false positive results have been observed. Neurosyphilis may be an early infectious complication or even the presenting one, in patients who subsequently develop AIDs[39].

**PREVENTION AND CONTROL OF HIV / AIDS**

It is done by

1. Surveillance

2. Counselling, health education and condom promotion

3. Blood safety by standardising blood banks

4. Protection of health care workers by following universal precaution

5. Early treatment of STD

The principles on how to bring about behavioural change and to sustain it needs to be intensely studied. Then only we can be more successful in our current efforts of HIV control[40].

# AIMS OF THE STUDY

1. To study Age and Sex distribution in HIV positive patients.

2. To study Risk factors involved in transmission of syphilis in HIV positives.

3. To study the clinical presentation of syphilis in HIV individuals

4. To assess VDRL titre in HIV (+) and HIV (-) syphilitic patients

5. To study other STD's occuring along with syphilis in HIV positive and Negatives.

# MATERIALS AND METHODS

## Study Design

Prospective observational study.

## Sample

Patients attending the STD OPD at Institute of Venerology, Government General Hospital, Chennai from June 2004 to December 2005 formed the subject of this study.

Final list of subjects included 80 syphilitic patients, of which 40 were HIV positive and 40 were HIV negative. There was no exclusion criteria.

## METHODOLOGY

The above selected patients for this study were interviewed. Their presenting complaints, sexual history, past history of anogenital disease and any treatment taken were elicited. The subjects underwent genital and complete physical examination. Screening for other sexually transmitted diseases (as seen in annexure) was done. Routine laboratory tests and serological investigations were done, which included Blood VDRL and TPHA. ELISA for HIV - 1, 2 antibody (Serum is submitted to dilution to overcome prozone phenomenon) assay was done after informed consent and providing present and post test counselling at VCTC.

**CRITERIA FOR DIAGNOSIS**

a. HIV infection

- ELISA for HIV 1 and Antibodies (Strategy III is followed)
- Confirmation by western blot if necessary.

**b. Primary syphilis**

1. Clinical features
2. Positive dark field examination
3. Serology VDRL and TPHA

(Any one of the 2 and 3)

c. Secondary Syphilis

1. Clinical features
2. Dark field examination of treponema pallidum
3. Serology - VDRL and TPHA

(Any one of (2) and (3)

d. Cardiovascular syphilis

- Clinical features
- Serology - VDRL and TPHA
- CXR, ECG, ECHO, USG Examination

e. Neuro syphilis

- Clinical features
- Serology - VDRL and TPHA
- CSF VDRL
- Positive protein and lymphocyte pleocytosis.

CSF analysis was done i) In patients with late latent syphilis of both HIV +ve and negative individuals and for those early syphilitic patient with clinical feature suggestive of neurosyphilis.

ii) For patients who gave their consent for Lumbar puncture after explaining the risks.

In addition, the following investigations were done to diagnose other coexisting STD's.

In case of genital ulcers

- Gram staining for Ducreyi
- Tissue smear for CBG
- Leishman's staining for GEC

In case of discharge

- Gram staining for Gonococi
- Wet film for trichomonas vaginalis
- Wet film for candida

- KOH examination for Bacterial vaginosis

- Endocervical swab for smear and culture for gonococci.

In case of genital growth

- Biopsy of lesions

For all patients urine sedimentation done for Gonococci.

In addition, routine investigations like complete haemogram, RFT, LFT were done.

The data obtained from above studies were analysed and the results reviewed and discussed.

# OBSERVATION

**TABLE - 1 : SEX DISTRIBUTION**

| Sex | HIV (+) | % | HIV Negative | % |
|---|---|---|---|---|
| Male | 22 | 55 | 24 | 60 |
| Female | 18 | 45 | 16 | 40 |

Analysis of sex distribution in this study shows that males are more commonly affected with syphilis in both HIV (+) and (-) patients.

**TABLE - 2(a) : AGE WISE DISTRIBUTION OF HIV POSITIVE -VS - HIV NEGATIVE MALE PATIENTS**

| Age group | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| 11-20 | 0 | 0 | 2 | 8 |
| 21-30 | 9 | 41 | 8 | 33 |
| 31-40 | 11 | 50 | 10 | 42 |
| 41-50 | 2 | 9 | 3 | 13 |
| >50 | 0 | 0 | 1 | 4 |

Analysis of age distribution in males shows that most of the patients are in sexually active age group of 20-40 yrs in both HIV (+) 90% and (-) 75% group. But both in HIV (+) and (-) group males commonly acquire syphilis during middle age period (ie) (31 - 40) age group.

**TABLE - 2(b) : AGE WISE DISTRIBUTION OF HIV POSITIVE - VS - HIV NEGATIVE FEMALE PATIENTS**

| Age group | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=18 | % | n=16 | % |
| 11-20 | 2 | 11 | 1 | 6.25 |
| 21-30 | 10 | 55.5 | 10 | 62.5 |
| 31-40 | 6 | 33.5 | 4 | 25 |
| 41-50 | 0 | 0 | 1 | 6.25 |
| >50 | 0 | 0 | 0 | 0 |

Analysis of age distribution in Females shows, most of the patients are in sexually active age group (20 - 40 years) in HIV (+) 90% and HIV (-) 88% females are more commonly affected in (21 - 30) age group in both study group

**TABLE - 3 : DOMICILE STATUS OF HIV POSITIVE - VS - HIV NEGATIVE PATIENTS**

| Domicile | HIV Positive | | | HIV Negative | | |
|---|---|---|---|---|---|---|
| | M | F | % | M | F | % |
| Rural | 9 | 7 | 40 | 11 | 5 | 40 |
| Urban | 13 | 11 | 60 | 13 | 11 | 60 |

Domicile status of patients reveal that 60% of both HIV (+) & (-) patients hailed from urban areas compared to 40% from rural areas.

**TABLE - 4(a) : MARITAL STATUS OF HIV POSITIVE - VS - HIV NEGATIVE MALE PATIENTS**

| Marital Status | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n = 22 | % | n = 24 | % |
| Married | 15 | 69 | 16 | 67 |
| Single | 7 | 31 | 8 | 33 |

Majority of males (70%) in both HIV (+) and (-) group were married.

**TABLE - 4(b) : MARITAL STATUS OF HIV POSITIVE - VS - HIV NEGATIVE FEMALE PATIENTS**

| Marital Status | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=18 | % | n=16 | % |
| Married | 7 | 40 | 10 | 62.5 |
| Separate | 3 | 16 | 2 | 12.5 |
| Widowed | 4 | 22 | 1 | 6.25 |
| Kept | 2 | 11 | 1 | 6.25 |
| Single | 2 | 11 | 2 | 12.5 |

In both HIV (-) and HIV Positive females (90%) are married. But a significant number were either widowed (22%), or separated from their husband (17%) (or) kept (11%) in HIV positive syphilitics.

**TABLE - 5(a) : OCCUPATION OF HIV POSITIVE - VS - HIV NEGATIVE MALE PATIENTS**

| Occupation | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| Labourer | 2 | 9 | 5 | 21 |
| Driver | 8 | 36.5 | 4 | 17 |
| Mason | 4 | 8 | 3 | 12.5 |
| Hotel Servant | 3 | 14 | 5 | 21 |
| Agriculture | 1 | 4.5 | 2 | 8.5 |
| Mechanical | 1 | 4.5 | 1 | 4 |
| Shop | 0 | 0 | 1 | 4 |
| MSM | 2 | 9 | 2 | 8 |
| Business | 1 | 4.5 | 1 | 4 |

In HIV (+) group, Truck drivers (36.5%) are more commonly affected. All other working groups are more or less equally affected.

In HIV (-) patients, all working groups are equally affected with syphilis.

**TABLE - 5(b) : OCCUPATION OF HIV POSITIVE - VS - HIV NEGATIVE FEMALE PATIENTS**

| Occupation | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=18 | % | n=16 | % |
| House wife | 6 | 33 | 3 | 19 |
| Building worker | 2 | 11 | 2 | 12.5 |
| Labourer | 2 | 11 | 4 | 25 |
| Business | 1 | 5.5 | 1 | 6 |
| Agriculture | 3 | 17 | 4 | 25 |
| CSW | 3 | 17 | 2 | 12.5 |
| Shopkeeper | 1 | 5.5 | 0 | 0 |

A significant No. of HIV (+) are House wives (33%). In other working groups, all are more or less equally affected, both in HIV (+) and (-) patients.

**TABLE - 6 : LITERACY RATE**

| Literacy | HIV Positive | | | HIV Negative | | |
|---|---|---|---|---|---|---|
| | **M** | **F** | **%** | **M** | **F** | **%** |
| Literate | 18 | 12 | 75 | 19 | 11 | 75 |
| Illiterate | 4 | 6 | 25 | 5 | 5 | 25 |

Majority of patients (75%) are literate in both HIV(+) and (-) group.

**TABLE - 7 : SEXUAL HISORY - Males**

| Sexual History | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| PMC | 4 | 18.1 | 6 | 25 |
| EMC | 6 | 27.3 | 8 | 33 |
| PMC & EMC | 11 | 50 | 7 | 29 |
| Denies | 1 | 4.6 | 3 | 13 |

Majority of both HIV (+) and (-) men were promiscuous and failed to use condoms. Both premarital and Extramarital contact are more common in HIV (+) group 50% compared to HIV (-) 30%.

**TABLE - 8 : MODE OF SEXUAL ACT - Males**

| Mode of sexual act | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| Heterosexual | 16 | 72.7 | 17 | 70 |
| Homosexual | 3 | 13.6 | 2 | 8.5 |
| Bisexual | 2 | 9.1 | 4 | 17 |
| IV Drug Abuse | 1 | 4.6 | 1 | 4.5 |

Most of the patients are heterosexuals (70%) both in HIV positive and negative syphilitics.

**TABLE - 9(a) PREVIOUS VENERAL DISEASE IN HIV POSITIVE - VS - HIV NEGATIVE MALE PATIENTS**

| Previous venereal diseases | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| Syphilis | 5 | 22.7 | 2 | 8.5 |
| Other genital ulcer | 5 | 22.7 | 4 | 17 |
| Genital discharge | 3 | 13.7 | 1 | 4.2 |
| Nil | 9 | 40.9 | 17 | 70.3 |

H/o. previous genital ulcer (45%) disease is commonly seen in HIV (+) patients. No H/o. previous venereal disease reportingly more common in HIV negative patients (70%) compared to HIV positive syphilitics (40%).

**TABLE - 9(b) PREVIOUS VENERAL DISEASE IN HIV POSITIVE - VS - HIV NEGATIVE FEMALE PATIENTS**

| Previous venereal diseases | HIV Positive | | HIV Negative | |
|---|---|---|---|---|
| | n=18 | % | n=16 | % |
| Syphilis | 2 | 11 | 1 | 6.3 |
| Vulvovaginal candidiasis | 3 | 16.5 | 1 | 6.3 |
| Bacterial vaginosis (BV) | 1 | 5.5 | 2 | 12.5 |
| Trichomoniasis (TV) | 1 | 5.5 | 2 | 12.5 |
| Cervicitis | 0 | - | 1 | 6.3 |
| Genital wart | 1 | 5.5 | 0 | 0 |
| Nil | 10 | 56 | 9 | 56 |

Past history of Genital discharge (30%) was seen significantly in both HIV positive & negative syphilitics, >50% of females in both study group gave no previous H/o veneral disease.

**TABLE - 10 : PRESENTING COMPLAINTS OF HIV POSITIVE - VS - HIV NEGATIVE PATIENTS**

| Presenting complaints | HIV Positive | | | HIV Negative | | |
|---|---|---|---|---|---|---|
| | M | F | % | M | F | % |
| Check up | 6 | 6 | 30 | 15 | 9 | 57.5 |
| Genital ulcer | 4 | 2 | 15 | 3 | 1 | 10 |
| Genital discharge | 1 | 5 | 15 | 2 | 4 | 15 |
| Chest Pain | 0 | 0 | 0 | 1 | 0 | 2.5 |
| Skin rash | 1 | 1 | 5 | 3 | 2 | 12.5 |
| Loss of appetite | 3 | 1 | 10 | 0 | 0 | 0 |
| Cough | 1 | 1 | 5 | 0 | 0 | 0 |
| Fever | 4 | 2 | 15 | 0 | 0 | 0 |
| Diarrhea | 2 | 0 | 5 | 0 | 0 | 0 |
| Diminished vision | 0 | 0 | - | 1 | 0 | 2.5 |

A significant number of HIV (+) males and females (30%) had come for routine checkup compared to 58% in HIV negative group. Among both study group Genital ulcer and Genital discharge are the Chief presenting complaints in males and females respectively. HIV (+)ve group also complained of various constitutional symptoms (35%) like fever, cough, weight loss which was conspicuously absent among HIV (-) patients.

**TABLE - 11 : PREVALENCE OF VARIOUS STAGES OF SYPHILIS IN AMONG HIV POSITIVE - VS - HIV NEGATIVE PATIENTS**

| Stage of Syphilis | HIV Positives | | HIV Negatives | |
|---|---|---|---|---|
| | No | % | No | % |
| Primary | 8 | 20 | 10 | 25 |
| Secondary | 8 | 20 | 9 | 22.5 |
| Early Latent | 13 | 32.5 | 14 | 35 |
| Late latent | 10 | 25 | 5 | 12.5 |
| Benign Tertiary | 1 | 2.5 | 0 | 0 |
| CVS | 0 | - | 1 | 2.5 |
| Neuro | 0 | - | 1 | 2.5 |

Early syphilis was more prevalent among HIV (-) Syphilitics, SY I (25%), SY II (22.5%) ELS (35%) compared to HIV positive person. SY I (20%), SY II (20%), ELS (32.5%).

1 case of cardiovascular (2.5%) and 1 case of neurosyphilis (2.5%) found to be prevalent in HIV (-) group.

**TABLE - 12 : HIGH VDRL TITRE IN VARIOUS STAGE OF SYPHILIS IN HIV POSITIVE AND NEGATIVE**

| Stage of Syphilis | High VDRL TITRE in HIV (+) | No. of Persons | High VDRL TITRE in HIV (-) | No. of Persons |
|---|---|---|---|---|
| Primary | 1:64 | 2 | 1:16 | 2 |
| Secondary | 1:64 | 5 | 1:64 | 2 |
| Early Latent (ELS) | 1:32 | 4 | 1:16 | 2 |
| Late latent (LLS) | 1:8 | 1 | 1:8 | 2 |
| Benign Tertiary | 1:8 | 1 | 0 | 0 |
| CVS | 0 | 0 | 1:8 | 1 |
| Neuro | 0 | 0 | 1:32 | 1 |

High VDRL titres were seen among HIV sero positives than among HIV negative persons. This was particularly evident among patient with early sphilis in primary 1:64 (25%), secondary 1:64(62.5%), ELS 1:32 (30%) compared to HIV (-) syphilitics primary 1:16 (20%), secondary 1:64 (22.5%), ELS 1:16 (15%). Serological titre was high among HIV (-) 1:8 (42%) in late latent stage than HIV (+) 1:8 (10%).

**TABLE - 13(a) ASSOCIATED DISEASES OF HIV POSITIVE**

**- VS - HIV NEGATIVE MALE PATIENTS**

| Associated disease | HIV Positives | | HIV Negatives | |
|---|---|---|---|---|
| | n=22 | % | n=24 | % |
| Gonorrhoea | 1 | 4.5 | 1 | 4.2 |
| Herpes Genitalis | 3 | 13.5 | 1 | 4.2 |
| Genital Warts | 4 | 18 | 0 | - |
| Chancroid | 0 | - | 1 | 4.2 |
| Molluscum contagiosum | 3 | 13.5 | 1 | 4.2 |
| Balanoposthitis | 2 | 9 | 1 | 4.2 |
| Nil | 9 | 41.5 | 19 | 79 |

Among HIV (+) males, Genital wart (18%) was the most common associated STD. Other STDs like Herpes Genitalis (13.5%), molluscum contagiosum (MC), (13.5%), Balanoposthitis (9%), found to be more common in HIV (+) males. No associated STD's (79%) was found in HIV (-) males compared to HIV (+) (42%).

**TABLE - 13(b) : ASSOCIATED SEXUALLY TRANSMITTED DISEASES OF HIV POSITIVE - VS - HIV NEGATIVE FEMALE PATIENTS**

| Associated disease | HIV Positives | | HIV Negatives | |
|---|---|---|---|---|
| | No | % | No | % |
| Trichomoniasis | 2 | 11 | 4 | 25 |
| Bacterial vaginosis | 3 | 16.5 | 2 | 13 |
| Vulvo Vaginal candidiasis | 4 | 22 | 1 | 7 |
| Genital Warts | 1 | 5.5 | 0 | - |
| Mollus cum contagiosum | 1 | 5.5 | 0 | - |
| Herpes Genitalis | 2 | 11 | 0 | - |
| Nil | 5 | 28 | 9 | 55 |

Among HIV (+) females, vulvovaginal candidiasis (22%) was the most common associated STD. Other conditions, like bacterial vaginosis (16.5%), genital wart (5.5), MC (5.5), Herpes (11%) found to be more common in HIV (+) females. In HIV (-) females, Trichomoniasis (25%) was the most common associated STD. No associated STD's (55%) was found in HIV (-) females compared to HIV (+) 28%.

**TABLE - 14 : ASSOCIATED NON VENEREAL DISEASES IN HIV POSITIVE - VS - HIV NEGATIVE SYPHILITICS**

| Associated non venereal disease | HIV Positives | | HIV Negatives | |
|---|---|---|---|---|
| | No | % | No | % |
| Oral candidiasis | 7 | 17.5 | 0 | - |
| Oral Hairy Leukoplakia | 2 | 5 | 0 | - |
| Dermatophytosis | 5 | 12.5 | 1 | 2.5 |
| Scabies | 2 | 5 | 1 | 2.5 |
| Herpes Zoster (HZV) | 2 | 5 | 0 | - |
| Pulmonary TB | 1 | 2.5 | 0 | - |
| Folliculitis | 2 | 5 | 0 | - |
| Nil | 19 | 47.5 | 38 | 95 |

Non venereal diseases are more common in HIV (+) syphilitics, like oral candidiasis (17.5%) dermatophytosis (12.5%), scabies (5%), HZV (5%), oral hairy leukoplakia (OHL) (5%), folliculitis (5%) in that order. HIV (-) syphilitics are not found to have any of these association.

# DISCUSSION

In the present study, males are more commonly affected with syphilis in both HIV (+) and (-) patients. Similar to study with Rathore et al.,[41] also majority of patients (90%) were in sexually active age group of 15 - 40 years. Study shows that, males are more commonly affected in age group of 30 - 40, while female patients are in 20 - 30 years. It was observed that 60% of both HIV (+) males and females hailed from urban areas while 40% from rural areas. This indicates that HIV population has been on increasing side in rural population also. This finding is supported by reports of TANSACS.

70% of both HIV (+) and (-) syphilitic males were married. Observation showing 90% of females in both study group are married, but a significant proportion of females were widowed (22%), seperated from husband (17%) in HIV (+) group. Also most of the females commonly acquire infection from their partners in both HIV (+) and (-) group. Among females house wives (33%) and in males long run truck drivers (35%) are more commonly affected in HIV (+) group. Among HIV negative patients involving in other working groups like business people, mason, agricultural coolies, labourers, shop keepers are more or less equally affected. This is an indication that both syphilis and HIV infection are more common among lower socioeconomic group, which needs to be taken care of. Majority of patients in both HIV (+) and (-) are literate, 75% among males, >50% among females. Taken into consideration of all these factors, there is a need to create awareness compaign about HIV/AIDS among high risk group like truck drivers and other low occupation groups and in rural areas. As many are found to be literate, a good awareness compaign can easily reach the people.

History of both premarital and extramarital contact were higher among HIV (+) males 50% compared to 30% of HIV negative males. Majority of HIV (+) males are promiscuous and many of them had not used condoms. Higher incidence of sexual promiscuity and non usage of condoms among males, highlights the need for education about safe sex. Most of the females (>70%) denies H/o premarital or extramarital contact. The commonest mode for males acquiring HIV infection is Heterosexual (70%). Past H/o syphilis (22%) and other genital ulcers (22%) found in HIV (+) males compared to 8.5% syphilis and 17% other genital ulcer in HIV -ve persons. No H/o previous venereal disease more common in HIV -ve males (70%) compared to 40% of HIV +ve males (40%). This again implies that promiscuity is higher among HIV positive males. Past history of genital discharge (30%) is common among both HIV +ve and (-) females. 12 HIV (+) patients (30%) has come for routine check up comparing to 60% in HIV (-) group. Among males genital ulcer and in females genital discharge was the chief presenting complaints in both HIV (+)- and (-). In addition, HIV positive males and females (35%) complained of various constitutional symptoms like fever, weight loss, cough, diarrhoea etc. which were conspicuously absent among HIV (-) persons. There symptoms may either due to syphilis (or) due to HIV infection, because secondary syphilitic patient can manifest with constitutional symptoms. Early diagnosis by regular screening of risk group will greatly help by detecting latent syphilis and HIV, So that early and effective intervention can be done.

Vulvovaginal candidiasis (22%) was the most common associated STD among HIV positive females compared to Trichomoniasis (30%) being most common among HIV negatives. Other infections like Herpes genitalis (11%). Molluscum contagiosum (5.5%)

Bacterial vaginosis (16.5%) found to be more common in HIV positive females.

Among male HIV (+)ves Herpes genitalis (13.5%) Genital wart (18%) molluscum contagiosum (9%), Balanoposthitis (9%) are commonly associated. No associated STD disease has been found in HIV negative females (50%) and males (78%).

Non venereal condition associated most commonly in presence of HIV oral candidiasis (18%) followed by Dermatophytosis, Herpes zoster, scabies folliculitis, oral hairy leukoplakia, Tuberculosis in that order. This may be explained in part, due to decreasing immunity of patients.

Prevalence of early syphilis was high among HIV -ve patients. (Primary (25%), secondary (22%) Early latent (35%)) compared to HIV (+) patients.

(Primary (20%), secondary (20%), Early latent (32.5%)). But late latent syphilitic prevalence is high among HIV (+) (25%) compared to HIV -ve (12.5%).

In this study high VDRL titre was found in HIV positive group in early syphilis. (Primary 1:64 (25%), Secondary 1:64 (62.5%), ELS 1:32 (30%)), Compared to HIV negative syphilitics. (Primary 1:16 (20%), Secondary 1:64 (22.5%), ELS 1:16 (15%).

This result may be due to HIV infection making a decrease in cell mediated immunity, and polyclonal B cell activation. Because of decreased Host immune response, patients donot manifest primary or secondary stage and directly enters latent stage of disease. Because of polyclonal B cell activation there will be hypergammaglobulinemia leading to high average VDRL titre in patients with early syphilis in HIV (+). This study has confirmed the findings of various studies done abroad[42].

**CLINICAL PRESENTATION OF SYPHILIS IN HIV**

In this study, Early syphilitic patients in HIV (+) individuals are showing increased incidence of atypical and aggressive clinical course like multiple chancres in 2 cases, a Giant necrotizing ulcer of glans[43] involving scrotum and one large extragenital chancre of upper lip. Similar findings have been reported in other studies.

Secondary syphilis in presence of HIV disease takes an aggressive course. Clinical presentation of atypical secondary syphilis in HIV positive group are one case of extensive pustular syphilid[44].

(2) one case of Annular syphilide of face with extensive palmoplantar Keratoderma with persistent primary chancre[45,46].

(3) One patient with secondary syphilis showing prozone phenomenon.

(4) One case with both partners developing extensive secondary syphilitic maculopapular rash with female developing condyloma lata lesion. Male with extensive palmoplantar involvement, split papules mucous patches over oral mucosa.

In HIV disease there is depletion of cell mediated immunity, probably these patients with aggressive primary and secondary syphilitic course are due to defect in cell mediated immunity, but unfortunately we were not able to correlate with $CD_4$ counts.

In the study, patients enter latent stage of syphilis more frequently than HIV (-) individuals. One patient with perforation of palate due to Gummatous infiltration was present.

Off late Gummatous syphilis are not seen now a days but because HIV (+) patients entering late latent stage more frequently they are getting into complication like Gumma.

Cardiovascular syphilis (Aortic regurgitation) was found in one patient of HIV (-) males. No case in HIV (+) patient with cardiovascular abnormality was found in this study.

In this study, 7(3 HIV (+) and 4 HIV (-)) out of 16 patients in late latent syphilis are subjected to Lumbar puncture and CSF Analysis after obtaining consent. One male patient in HIV (-) group gave reactive CSF VDRL 1:8, and treated with procaine penicillin 12 lakhs Im for 21 days. But none of HIV positive patients showed any CSF changes and hence Neurosyphilis was not prevalent in HIV positive patients in this study, in contrast to some of the studies done abroad[47,48,49].

**Response to therapy**

All the patients in this study were treated with standard dose of penicillin injections either with Benzathine penicillin or procaine penicillin in early and late stages of syphilis. It has been recommended from some studies to give 3 injection of Benzathine penicillin in HIV positive early syphilitics instead of single injection, which is the standard dose. But according to Gob BT et al.,[50], 3 injection had no significant benefit over single injection. So in this study only single injection of Benzathine penicillin was given for early syphilitics[25,26].

Delayed healing of lesions were observed in 3 out of 8 primary syphilis (37.5%), 2 out of 7 secondary syphilitic (28%) with HIV positive persons, similar to study with Yinnon A.M et al.,[51]. But in HIV negative group 1 patient with primary syphilis showed delayed healing.

Though penicillin was found to be an useful drug even in the presence of HIV infection delayed serological response was observed in 10 out of 28 (35.8%) patients who come for followup. The average time taken for four fold decrease in VDRL titre was 15 weeks in case of HIV (+) person compared to 10 weeks in HIV negative syphilitics.

# CONCLUSION

This study of male and female syphilitics attending STD clinic clearly points to certain changes in the era of HIV / AIDs. In both study groups, males are commonly affected and 90% of males and females belongs to sexually active age group (15 - 40 years). 40% of both HIV (+) and (-) hailed from rural areas indicating infection increasing in rural population also. 70% of males and 90% of females in both study group are married. But in HIV (+) females, high % are either widowed (22%) or seperated from husband (17%). 70% of females denies H/o sexual act indicating they acquire infection from their partners. Common mode of sexual act in both study group was heterosexual (70%). HIV / AIDs still has high incidence in high risk groups like Truck drivers (36.5%) mason (18%), Hotel Servant (14%) and other lower socio economic groups. So HIV control programme has to focus more on these people since they had the potentiality to spread the infection into General population. Factors like promiscuity (both PMC and EMC) 50%. Past H/o Genital ulcer disease (45%) in males and non usage of condoms are important factors responsible for acquisition of syphilis and HIV.

Commonly associated STDs are vulvovaginal - candidiasis (22%), Bacterial vaginosis (16.5%), Herpes genitalis (11%) in HIV (+) females compared to Trichomonisis (25%) in HIV (-) females. Similarly in HIV (+) males, Genital wart (18%), Herpes Genitalis (13.5%) are the common associated STD's.

Non venereal conditions like oral candidiasis (18%) Dermatophytosis (12.5%), Scabies (5%), oral hairy leukoplakia (5%) and many constitutional symptoms like fever, weight loss, cough, diarrhoea are commonly associated with HIV infection.

In this study Early syphilis was more prevalent in HIV (-) persons (82.5%) than HIV (+) (72.5%). But Late latent syphilis seems to be common in HIV (+) 25% than HIV (-) 12.5%. Some unusual and atypical courses of syphilis were observed in HIV positive patients. One patient (2.5%) with neurosyphilis in HIV negative group has been reported.

High non treponemal (VDRL) titres were seen among HIV positive than among HIV negative syphilitics. This was particularly evident in patients with early syphilis. Delayed serological response to standard therapy for syphilis were also observed in HIV positive persons.

Though penicillin is an useful drug even in the presence of HIV infection delayed healing of lesions occurs in some. Hence, treatment efficacy should be monitored carefully and regular follow up to rule out neurosyphilis.

# PROFORMA

| | | | |
|---|---|---|---|
| SL.No. | STD No. | IP. No. | DATE |
| Name | Age | Sex | Weight |
| Address | Religion | Self / Referred | |

LITERARCY

| | | |
|---|---|---|
| Occupational Status | : | Unemployed / Employed<br>Monthly Income Rs. |
| Marital Status | : | Single - Married - Seperated - Widowed - Divorced. |
| Presenting Complaints with Duration | : | |
| Treatment Taken | : | |
| Treated by | : | STD Specialist - GP's - Others |
| Sexual History | : | Heterosexual / Bisexual<br>Homosexual : Insertive / Receptive / Both |
| Age at First Exposure and with H/o. of Recent Exp. | : | Years, Wife / Known / Unknown / CSW |
| Marital | : | |

Pre Marital :

Extra Marital :

Previous H/o
Venereal Diseases :

Mode of Sexual Activity : Genital - Anal - Fellatio - Cunnilingus - others

Past History of : Blood transfusion - IV drug abuse - tatooing - jaundice - Abortion - Herpeslabialis - Anemia - TB - Diabetes - Prolonged steroid - prolonged antibiotic therapy - drug allergy - topical application other

Menstrual H/o :

Obstetrical H/o :

**LOCAL EXAMINATION**

Genital Examination :

Speculum Examination :

Per Rectal Examination :

Examination of Anal :
Perianal - perineal region :

**GENERAL EXAMINATION**

Skin and mucous membrane :
lymphadenopathy Localised / Generalised discrete / matted tender / non tender.

Bones and Joints :

CVS and CNS :

**INVESTIGATIONS**

Microscopy : Grams - Leishman's - Tzanck - Papanicolau - wetfilm - KoH.

Dark Field Examination :

Serological : VDRL / TPHA / ELISA / Western blot

Diagnosis :

Treatment :

Follow up :

Conclusions :

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